

AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 1 . This sheet, which includes Fig. 1, replaces the original sheet including Fig. 1.

REMARKS/ARGUMENTS

Claims 1-26 stand rejected in the outstanding Official Action. Claims 1-6, 8, 9, 12-16, 21, 23 and 24 have been amended, claim 19 has been cancelled without prejudice and claim 32 has been added for consideration. Accordingly, claims 1-18, 20-26 and 32 are the only claims remaining in this application.

The Examiner's acknowledgment of Applicant's claim for foreign priority and receipt of the certified copy of the priority document is very much appreciated. Additionally, the indication of PTO acceptance of the originally filed formal drawings is appreciated. Finally, the Examiner's consideration of Applicant's previously submitted Information Disclosure Statement and the prior art noted thereon is appreciated.

The specification is objected to, with the Examiner correctly noting that the phrase "offset to be added" on page 23, line 3 should actually read "offset to be added or subtracted." Applicant has amended the specification to make this amendment.

The Examiner also objects to pages 9 and 10 where indicated as containing phrases involving the word "means." The Examiner suggests that the phrase "means" should not be used in Applicant's specification. The undersigned is aware of only a PTO requirement that such legal phrases are not to be used in the abstract of the disclosure, but is aware of no prohibition against the use of legal phraseology in the remaining portion of Applicant's specification. Indeed, such usage is generally encouraged so that one of ordinary skill can clearly understand the corresponding structure to any "means" recitation in the claims (pursuant to 35 USC §112(6th paragraph)). However, notwithstanding the above, Applicant sees no difficulty in complying with the Examiner's request and has deleted the word "means."

The Patent Office objects to the arrangement of the specification. It is also appreciated that the Examiner has brought the arrangement of the specification to the applicant's attention. It is noted that the objection to the arrangement appears to be an indication that the originally filed specification and drawings (transmitted from WIPO) do not meet the formality requirements of the U.S. Patent and Trademark Office. The Patent Office is reminded that the U.S. Patent and Trademark Office must comply with all articles of the Patent Cooperation Treaty (PCT) including Article 27. It has been held that:

"if the rule and interpretation of the PTO conflicts with the PCT, it runs afoul of Article 27 of the PCT which provides in part:

- (1) No national law shall require compliance with requirements relating to the form or contents of the international application different from or additional to those which are provided for in this Treaty and the Regulations." Caterpillar Tractor v. Commissioner, 231 USPQ 590, 591 (EDVA 1986).

The Patent Office has referenced this decision in the Official Gazette dated September 9, 1986 (1070 TMOG 5).

As a consequence, the Patent Office (including the Chief Draftsman's Office) may not require specification format changes as long as the originally submitted documents comply with the PCT requirements. Inasmuch as this specification was forwarded for WIPO, by definition, they meet the PCT requirements (they are not forwarded until they meet PCT requirements.). Therefore, the objection to the specification and is respectfully traversed and reconsideration thereof is respectfully requested.

Notwithstanding the above, applicant has added headings and subheadings to the specification.

The disclosure is objected to in section 3 on page 3 of the outstanding Official Action, with the Examiner contending that the subject matter on page 2, lines 5-8 is inconsistent with the subject matter on page 12, lines 5-15. This inconsistency is completely intentional on Applicant's part, as the discussion on page 2, lines 5-8 is with respect to a "known prior art" switching circuit (see the first sentence of the paragraph bridging pages 1 and 2) whereas the subject matter on page 12 is the claimed invention. Applicant also encloses an amended Figure 1 where Figure 1 is labeled as "Prior Art" so as to avoid any future confusion, thereby obviating any possible objection or rejection in the future.

Page 24, lines 23-24 are objected to, as the Applicant has used the notation "ROUND" to indicate the well-known rounding function. Those having ordinary skill in the art will clearly understand that the use of the term in the fashion shown on page 24 means that the number is rounded off to the nearest integer, i.e., a number ending in 4.49999... or less will be rounded off to 4 and the number 4.5000... will be rounded off to 5. Those of ordinary skill in the computer programming art would always round to the nearest integer as a matter of course in computer programming and that is what the ROUND function does. Thus, it is not believed necessary to provide any further discussion in Applicant's specification of this well-known function.

In the first full paragraph beginning on page 4 of the Official Action, the Examiner suggests that page 25, line 16 is a "formula" and therefore the phrase " $d_A = -d_A$ " is only true for the quantity zero. However, page 25, lines 15-17 is in fact a computer algorithm and thus the format is in computer programming language. In this specific program, as is stated on page 25, lines 18 and 19, " **d_A is initially set to +1** and its value is carried through from one period to the next." (emphasis added). However, the sign + or - in front of the number 1 changes from period

to period, consistent with the computer instruction at line 16, i.e., $d_A = -d_A$. This notation means that d_A is replaced by $-d_A$ in the next step and would be obvious to those of ordinary skill in the art, especially in view of the reference to the use of "alternate odd asymmetry, i.e. by alternating the offset between the leading and trailing edge halves of the period." (Page 25, lines 12-13).

Thus, Applicant believes that d_A is defined in the specification (as being 1) and in each iteration, it changes between a +1 and a -1. As a result, the subject matter on page 25, lines 11-19 would be clearly understood by those having ordinary skill in the art having experience with computer programming of such systems. Having pointed out where d_A is defined in the specification and having clarified that the phrase " $d_A = -d_A$ " is merely the sign change for each subsequent program step, it is submitted that page 25, line 16 meets the requirements of 35 USC §112 and any further objection thereto is respectfully traversed.

In section 5, page 4 of the Official Action, the Examiner has alleged that claims 19 and 20 are essentially duplicate claims. However, the Examiner then notes that there is a slight difference in wording, but that the Examiner reads into claim 19 the requirement for storing a computer program on a computer readable medium. While the storage medium specified in claim 20 would be implied by reading claim 19, the language is clearly different, and indeed the Patent Office in recent months has insisted upon applicants reciting computer readable storage medium in computer program product claims. However, Applicant has cancelled claim 19, thereby obviating any further objection to claims 19 and 20 under any double patenting concerns.

The Examiner has set out a number of claim objections and each one will be taken in turn. Claims 2-6 and 16 are objected to as containing the word "comprising," with the Examiner concluding that the language should be "further comprising." The legal definition of the word

"comprising" means a non-limitative inclusive, i.e., the subject of "comprising" includes the material recited, but is without limitation, i.e., it can include additional material. Therefore, where "comprising" is used in one claim and then in a dependent claim the word "comprising" is used again, it would be redundant to say "further comprising," since the initial "comprising" includes the subsequent "comprising." Notwithstanding the above, applicant has amended claims 3-6 and 16 as suggested by the Examiner to include the phrase "further comprising," but has reworded claim 2 so as to obviate the need for "comprising" by using the term "comprises." Therefore, in view of the above amendments to claims 2-6 and 16, there is no further basis for objection.

The Examiner has correctly noted that claim 4, line 1 includes a typographical error which has been corrected by the above amendment. The Examiner correctly notes in claim 8 that the second V_S should have a negative sign in front of it and claim 8 has been corrected. The Examiner has also correctly noted that claim 24, line 1, as originally submitted, should have read "further comprising a voltage" and claim 24 has been amended in this fashion.

In view of the above explanation and amendments, claims 2-6, 8, 16 and 24 are believed to meet all formal requirements and any further objection thereto is respectfully traversed.

In section 8 of the Official Action, claim 2 is objected to as failing to properly limit a previous claim. Both claims 1 and 2 have been substantially amended to more clearly recite the subject matter of Applicant's invention. It is noted that claim 1 recites "at least one of the first and second switching signals comprises a single pulse of a determined width within the period" and that claim 2, as amended, specifies that "the **first** switching signal comprises a single pulse of a **first** determined width within the period." (emphasis added). Thus, amended claim 2 does

clearly limit amended claim 1, thereby obviating any further objection to claim 2 or claims dependent thereon.

The Examiner has correctly noted that claim 6 does not appear to limit the subject matter of claim 5. Applicant's review of claim 6 indicates that its dependency should have been from claim 1 instead of claim 5 and has amended claim 6 in this fashion above. Thus, claim 6 clearly limits the subject matter of claim 1, from which it now depends.

Claims 8, 23 and 24 are objected to in section 10 on page 6 of the Official Action as being in improper dependent form. Applicant has amended claim 8 to be singly dependent from claim 1, thereby obviating any further objection to the claim. Claim 8 is drafted so as to incorporate the steps of claim 1 as recited, i.e. the steps relating to the "generating pulsed first and/or second switching signals in accordance with claim 1." This is a shorthand notation for the subject matter of Applicant's claim 1 and is in complete accord with the Board of Patent Appeals and Interferences decision in *Ex parte Porter*, 25 USPQ2d 1144, 1147 (BOPAI 1992).

In the *Porter* case, the Board held that it is well known that claims can be "drafted in a short-hand format to avoid rewriting the particulars" of another claim from which it is dependent. Applicant has clearly employed this "short-hand format" in claim 8 by merely referencing claim 1 and thereby incorporating by reference the method steps and other information contained in claim 1. Because the Board has approved this claim format, Applicant believes there to be no need to amend claim 8 further, other than by making it singly dependent, rather than multiply dependent.

Claims 23 and 24 are structural recitations which are dependent upon method claims. However, the method claims, from which claims 23 and 24 depend, are used to clearly

characterize the claimed "processing means" which is programmed to perform the method steps. Again, *Ex parte Porter* clearly permits a method claim to be dependent from an apparatus claim and *vice versa* so as to take advantage of the "short-hand format" to avoid rewriting the particulars of a parent claim. Thus, claims 23 and 24 dependent from claims 8 and 9, respectively, clearly meet the requirements of §112 and do not run afoul of Rule 75(c).

Applicant has amended claim 24 to eliminate the dual dependency and to incorporate the similar subject matter from claim 23, from which it previously depended. Thus, claims 23 and 24 are believed to meet all requirements and any further objection thereto is respectfully traversed.

Claim 24 is also objected to in section 11 of the Official Action as being in improper form. As noted above, Applicant has eliminated the multiple dependency to claims 23 and 9 in claim 24 and so claim 24, in amended form, is singly dependent on claim 9, thereby obviating any further objection.

Claim 24 also stands objected to as being dependent from claim 8 which was previously multiple dependent. Since claim 8 has been amended to be singly dependent, claim 24, which is singly dependent from claim 8, is now in accord with PTO claim practices.

Claims 23 and 24 stand rejected under 35 USC §101 as being directed to non-statutory subject matter. The Examiner suggests that because claims 23 and 24 relate to device elements and method steps, the claims are directed to non-statutory subject matter. The Applicant notes that in drafting claims 23 and 24, at least in the present Amendment, Applicant is only claiming a bridge circuit. However, the bridge circuit includes a specific recited structure and a processing means for performing a sequence of method steps and has employed the "short-hand format" in

reference to the method steps of claims 8 & 9, respectively. Thus, claims 23 & 24 recite a bridge circuit comprising the various elements which is clearly statutory. Claims 23 & 24 do not cover any method of accomplishing anything and is instead directed solely to the recited structures. Accordingly, claims 23 and 24 are clearly apparatus claims and any further rejection as allegedly being non-statutory is respectfully traversed, as these claims are believed to be in complete accordance with the "short-hand format" suggested by the Board of Patent Appeals and Interferences in the *Ex parte Porter* case.

Claims 19 and 20 stand rejected under 35 USC §112 (first paragraph) as failing to comply with the enablement requirement. As noted above, Applicant believes there to be a distinction between claims 19 and 20, but has cancelled claim 19 without prejudice, thereby obviating any rejection of that claim. Applicant believes that the phrase "computer and/or other processing means" is a means-plus-function recitation which encompasses not only the computer disclosed in Applicant's specification, but equivalents thereof, i.e., processors, microprocessors, chips, etc. While Applicant believes that the wording of claim 20 might be somewhat stilted, it is believed to be a completely statutory claim and one meeting the requirements of 35 USC §112 and any further rejection thereunder is respectfully traversed.

Claims 1-26 stand rejected under 35 USC §112 (second paragraph) as being indefinite. In section 18 on page 8 of the Official Action, the Examiner objects to the use of the term "substantially," indicating that the phrase is not defined by the claim. Applicant respectfully draws the Examiner's attention to the Manual of Patent Examining Procedure (MPEP) Section 2173.05(b) wherein the MPEP states that in at least two cases – one, the Court of Customs and Patent Appeals in 1960 and the other the Court of Appeals for the Federal Circuit in 1988 – held

that the word "substantially" was definite because one of ordinary skill in the art would know what was meant by "substantially equal."

In the present case, the use of the word "substantially" is in combination with the word "equal" i.e., to form the phrase "substantially equal." What "substantially equal" means would be clearly understood by those of ordinary skill in the art reading this claim. Clearly, minor variations in the voltage at the output are acceptable and thus the voltage does not have to be exactly the same all of the time. In fact, the phrase "substantially equal" essentially means that there is no possible mechanism to provide a voltage which is equal at all times and that there are going to be minor variations in the supplied voltage. However, all that is required is that the voltage be "substantially equal to the desired voltage."

Thus, in view of the MPEP acceptance of the word "substantially" and the use of that phrase in a conventional fashion, i.e., "substantially equal" in Applicant's independent claim 1 and claims dependent thereon, the use of this word is not indefinite and does not render claim 1 indefinite. The comments with respect to the use of "substantially" in claim 8 and in claims 15 and 16 are the same issue as in claim 1 and the discussion above is herein incorporated by reference.

Claims 23 and 24 are alleged to be indefinite as claiming both "a device and a method." This is set out in section 21 on page 9 of the Official Action. This is believed to be similar to the non-statutory subject matter rejection in paragraph 13 of the Official Action and the above comments relating thereto are herein incorporated by reference.

The Examiner's indication that claims 1-18, 21 and 22 contain allowable subject matter is very much appreciated. Applicant believes that the cancellation of claim 19 and the amendments

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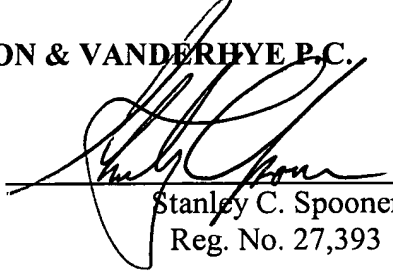
to claims 1-6, 8, 9, 12-16, 21, 23 and 24 render all pending claims allowable. Applicant has also submitted newly written claim 32 and requests consideration of that claim. Accordingly, it is believed that remaining claims 1-18, 20-26 and 32 are in condition for allowance.

Having responded to all objections and rejections set forth in the outstanding Official Action, it is submitted that claims 1-18, 20-26 and 32 are in condition for allowance and notice to that effect is respectfully solicited. In the event the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of these claims, he is respectfully requested to contact Applicant's undersigned representative.

Respectfully submitted,

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